## CLAIMS

We claim:

1. An apparatus comprising:

a tool; and

an alignment detector mounted on said tool, wherein said alignment detector includes:

one or more laser sources adapted to provide one or more laser beams; and

one or more optical elements each aligned to receive a respective laser beam in said one or more laser beams, wherein:

said one or more optical elements are adapted to convert said one or more laser beams into a plurality of laser outputs, and

said plurality of laser outputs form a pattern on an incident surface indicating an alignment of said alignment detector with respect to said incident surface.

2. The apparatus of claim 1, wherein said tool is a drill and said alignment detector is mounted to said drill so that a drill bit in said drill is normal to said incident surface when said plurality of laser outputs form a predefined pattern on said incident surface.

3. The apparatus of claim 1, wherein said pattern is an orthogonal grid when said alignment detector has a predefined alignment with said incident surface.

4. The apparatus of claim 1, wherein said one or more optical elements are one or more holographic plates.

5. The apparatus of claim 1, further including:

a depth detector coupled to said tool.

6. The apparatus of claim 5, wherein said depth includes:

one or more second laser sources adapted to provide one or more second laser beams; and

one or more second optical elements each aligned to receive a respective laser beam in said one or more second laser beams, wherein:

said one or more second optical elements are adapted to convert said one or more second laser beams into one or more sets of laser outputs,

said one or more sets of laser outputs from said one or more second optical elements form one or more sets of patterns on said incident surface; and

a spatial relationship between a first set of patterns in said one or more sets of patterns and a second set of patterns in said one or more sets of patterns changes in a predefined manner as a distance between said one or more second optical elements and said incident surface changes.

7. The apparatus of claim 5, further including:

a level detector coupled to said tool.

8. The apparatus of claim 1, further including:

a level detector coupled to said tool.

9. The apparatus of claim 8, wherein said level detector includes:

one or more third laser sources adapted to provide one or more third laser beams; and

one or more third optical elements each aligned to receive a respective laser beam in said one or more third laser beams, wherein:

said one or more third optical elements are adapted to provide a set of laser planes,

said set of laser planes includes a first laser plane intersecting a second laser plane at an intersection line, and

said intersection line appears on said incident surface if said incident surface is level.

10. The apparatus of claim 1, wherein said tool is adapted to operate on said incident surface, wherein said tool includes:

an action component adapted to operate on said incident surface,

a location detector adapted to determine an orientation of said action component, based at least in part on a position of a set of one or more guides, and provide orientation information corresponding to said orientation, and

a component controller in communication with said location detector to receive said orientation information, and in communication with said action component to adjust said action component in response to said orientation information.

11. An apparatus, comprising:

a tool; and

a depth detector mounted on said tool, wherein said depth detector includes:

one or more laser sources adapted to provide one or more laser beams; and

one or more optical elements each aligned to receive a respective laser beam in said one or more laser beams, wherein:

said one or more optical elements are adapted to convert said one or more laser beams into one or more sets of laser outputs,

said one or more sets of laser outputs form one or more sets of patterns on an incident surface; and

a spatial relationship between a first set of patterns in said one or more sets of patterns and a second set of patterns in said one or more sets of patterns changes in a predefined manner as a distance

between said one or more optical elements and said incident surface changes.

12. The apparatus of claim 11, wherein said one or more sets of laser outputs is one or more sets of laser planes.

13. The apparatus of claim 12, wherein said one or more sets of laser planes includes a first set of laser planes and a second set of laser planes, wherein said first set of laser planes forms said first set of patterns on said incident surface and said second set of laser planes forms said second set of patterns on said incident surface.

14. The apparatus of claim 11, wherein said one or more optical elements are one or more holographic plates.

15. The apparatus of claim 11, further including:

a level detector coupled to said tool.

16. The apparatus of claim 15, wherein said level detector includes:

one or more second laser sources adapted to provide one or more second laser beams; and

one or more second optical elements each aligned to receive a respective laser beam in said one or more second laser beams, wherein:

said one or more second optical elements are adapted to provide a set of laser planes,

said set of laser planes includes a first laser plane intersecting a second laser plane at an intersection line, and

said intersection line appears on said incident surface if said incident surface is level.

17. The apparatus of claim 11, wherein said tool is adapted to operate on said incident surface, wherein said tool includes:

an action component adapted to operate on said incident surface,

a location detector adapted to determine an orientation of said action component, based at least in part on a position of a set of one or more guides, and provide orientation information corresponding to said orientation, and

a component controller in communication with said location detector to receive said orientation information, and in communication with said action component to adjust said action component in response to said orientation information.

18. An apparatus, comprising:

a tool; and

a level detector mounted to said tool, wherein said level detector includes:

one or more laser sources adapted to provide one or more laser beams; and

one or more optical elements each aligned to receive a respective laser beam in said one or more laser beams, wherein:

said one or more optical elements are adapted to provide a set of laser planes,

said set of laser planes includes a first laser plane intersecting a second laser plane at an intersection line, and

said intersection line appears on an incident surface if said incident surface has a predefined topographical condition.

19. The apparatus of claim 18, wherein said predefined topographical condition is said incident surface being level.

20. The apparatus of claim 18, wherein said one or more optical elements are one or more holographic plates.

21. The apparatus of claim 18, wherein a line from said first laser plane and a line from said second laser plane appear separately on said incident surface, if said incident surface is not level.

22. The apparatus of claim 18, wherein said tool is adapted to operate on said incident surface, wherein said tool includes:

an action component adapted to operate on said incident surface,

a location detector adapted to determine an orientation of said action component, based at least in part on a position of a set of one or more guides, and provide orientation information corresponding to said orientation, and

a component controller in communication with said location detector to receive said orientation information, and in communication with said action component to adjust said action component in response to said orientation information.

23. An alignment detector, comprising:

one or more laser sources adapted to provide one or more laser beams; and

one or more optical elements each aligned to receive a respective laser beam in said one or more laser beams, wherein:

said one or more optical elements are adapted to convert said one or more laser beams into a plurality of laser planes,

said plurality of laser planes form a predefined pattern on an incident surface when said incident surface has a predefined relationship to said alignment detector, and

said one or more sets of laser planes includes:

a first set of laser planes having a first laser plane and a second laser plane, and

a second set of laser planes having a third laser plane and a fourth laser plane.

24. The alignment detector of claim 23, wherein said first laser plane and said second laser plane diverge from each other, and wherein said third laser plane and said fourth laser plane diverge from each other.

25. The alignment detector of claim 23, wherein said first laser plane and said second laser plane converge toward each other, and wherein said third laser plane and said fourth laser plane converge toward each other.

26. The alignment detector of claim 23, wherein said predefined pattern is an orthogonal grid.

27. The alignment detector of claim 23, wherein:

said first laser plane and said second laser plane form a first pair of parallel lines on said incident surface, if said incident surface has said predefined relationship to said alignment detector, and

said third laser plane and said fourth laser plane form a second pair of parallel lines on said incident surface, if said incident surface has said predefined relationship to said alignment detector.

28. The alignment detector of claim 27, wherein said first pair of lines is perpendicular to said second pair of lines, if said incident surface has said predefined relationship to said alignment detector.

29. The alignment detector of claim 28, wherein said predefined relationship requires a face of said alignment detector to be parallel with said incident surface.

30. The alignment detector of claim 27, wherein said first set of planes is offset ninety degrees from said second set of planes.

31. The alignment detector of claim 23, wherein said one or more laser sources are one or more laser diodes.

32. The alignment detector of claim 23, wherein said one or more optical elements are one or more holographic plates.

33. A depth detector, comprising:

one or more laser sources adapted to provide one or more laser beams; and

one or more optical elements each aligned to receive a respective laser beam in said one or more laser beams, wherein:

said one or more optical elements are adapted to convert said one or more laser beams into one or more sets of laser outputs,

said one or more sets of laser outputs form one or more sets of patterns on an incident surface; and

a spatial relationship between a first set of patterns in said one or more sets of patterns and a second set of patterns in said one or more sets of patterns changes in a predefined manner as a distance between said one or more optical elements and said incident surface changes.

34. The depth detector of claim 33, wherein said one or more sets of laser outputs is one or more sets of laser planes.

35. The depth detector of claim 34, wherein said one or more sets of laser planes includes a first set of laser planes and a second set of laser planes, wherein said first set of laser planes forms said first set of patterns on said incident surface and said second set of laser planes forms said second set of patterns on said incident surface.

36. The depth detector of claim 35, wherein laser planes in said first set of laser planes are parallel to each other and laser planes in said second set of laser planes are parallel to each other.

37. The depth detector of claim 36, wherein said laser planes in said first set of laser planes converge with said laser planes in said second set of laser planes.

38. The depth detector of claim 35, wherein said first set of patterns is a set of parallel lines and said second set of patterns is a set of parallel lines.

39. The depth detector of claim 35, wherein said first set of patterns is a set of parallel lines and said second set of patters is a set of lines perpendicular to lines in said first set of lines.

40. The depth detector of claim 39, wherein said first set of laser planes converge with said second set of laser planes.

41. The depth detector of claim 33, wherein said one or more laser sources are one or more laser diodes.

42. The depth detector of claim 33, wherein said one or more optical elements are one or more holographic plates.

43. A level detector, comprising

one or more laser sources adapted to provide one or more laser beams; and

one or more optical elements each aligned to receive a respective laser beam in said one or more laser beams, wherein:

said one or more optical elements are adapted to provide a set of laser planes,

said set of laser planes includes a first laser plane intersecting a second laser plane at an intersection line, and

said intersection line appears on an incident surface if said incident surface has a predefined topographical condition.

44. The level detector of claim 43, wherein said predefined topographical condition is said incident surface being level.

45. The level detector of claim 43, wherein a line from said first laser plane and a line from said second laser plane appear separately on said incident surface, if said incident surface is not level.

46. The level detector of claim 43, wherein said one or more laser sources are one or more laser diodes.

47. The level detector of claim 43, wherein said one or more optical elements are one or more holographic plates.